

EZ Switch 10/100

16-Port Fast Ethernet Switch

- ◆ 16 auto-MDI/X ports – connect to PCs or other switches or hubs
- ◆ Plug and play – nothing to configure, no crossover cables required
- ◆ Auto-negotiation of speed and duplex mode
- ◆ Full-duplex support on all ports
- ◆ Half- and full-duplex flow control
- ◆ Desktop and rack mountable



EZ Switch 10/100 User Guide

From SMC's EZ line of low-cost workgroup LAN solutions

SMC[®]

Networks

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Irvine, CA 92618

COMPLIANCES

FCC - Class A

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause interference to radio communications. It has been tested and found to comply with the limits for a Class A computing device pursuant to Subpart B of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment. Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference. You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void your authority to operate the equipment.

You may use Category 5 or 5e UTP or STP cable for RJ-45 connections. Use 62.5/125 or 50/125 micron multimode fiber cable, or 9/125 singlemode fiber cable for SC connections.

Warnings 1. Wear an anti-static wrist strap or take other suitable measures to prevent electrostatic discharge when handling this equipment.

2. When connecting this hub to a power outlet, connect the field ground lead on the tri-pole power plug to a valid earth ground line to prevent electrical hazards.

Industry Canada - Class A

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus as set out in the interference-causing equipment standard entitled “Digital Apparatus,” ICES-003 of the Department of Communications.

Cet appareil numérique respecte les limites de bruits radioélectriques applicables aux appareils numériques de Classe A prescrites dans la norme sur le matériel brouilleur: “Appareils Numériques,” NMB-003 édictée par le ministère des Communications.

Japan VCCI Class A

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SMC contact for these products in Europe is:

SMC Networks Europe,
Edificio Conata II,
Calle Frutuós Gelabert 6-8, 2^a, 4^a,
08970 - Sant Joan Despí,
Barcelona, Spain.

This information technology equipment complies with the requirements of the Council Directive 89/336/EEC on the Approximation of the laws of the Member States relating to Electromagnetic Compatibility and 73/23/EEC for electrical equipment used within certain voltage limits and the Amendment Directive 93/68/EEC. For the evaluation of the compliance with these Directives, the following standards were applied:

- RFI Emission:
- Limit class A according to EN 55022:1998
 - Limit class A for harmonic current emission according to EN 61000-3-2/1995
 - Limitation of voltage fluctuation and flicker in low-voltage supply system according to EN 61000-3-3/1995
- Immunity:
- Product family standard according to EN 55024:1998
 - Electrostatic Discharge according to EN 61000-4-2:1995 (Contact Discharge: ± 4 kV, Air Discharge: ± 8 kV)
 - Radio-frequency electromagnetic field according to EN 61000-4-3:1996 (80 - 1000 MHz with 1 kHz AM 80% Modulation: 3 V/m)
 - Electrical fast transient/burst according to EN 61000-4-4:1995 (AC/DC power supply: ± 1 kV, Data/Signal lines: ± 0.5 kV)
 - Surge immunity test according to EN 61000-4-5:1995 (AC/DC Line to Line: ± 1 kV, AC/DC Line to Earth: ± 2 kV)
 - Immunity to conducted disturbances, Induced by radio-frequency fields: EN 61000-4-6:1996 (0.15 - 80 MHz with 1 kHz AM 80% Modulation: 3 V/m)
 - Power frequency magnetic field immunity test according to EN 61000-4-8:1993 (1 A/m at frequency 50 Hz)
 - Voltage dips, short interruptions and voltage variations immunity test according to EN 61000-4-11:1994 (>95% Reduction @10 ms, 30% Reduction @500 ms, >95% Reduction @5000 ms)
- LVD:
- EN 60950 (A1/1992; A2/1993; A3/1993; A4/1995; A11/1997)

Australia AS/NZS 3548 (1995) - Class A



ACN 069 351 613

SMC contact for products in Australia is:

SMC Communications Pty. Ltd.
Suite 18, 12 Tryon Road,
Lindfield NSW2070,
Phone: 61-2-94160437
Fax: 61-2-94160474

Safety Compliance

Underwriters Laboratories Compliance Statement

Important! Before making connections, make sure you have the correct cord set. Check it (read the label on the cable) against the following:

Operating Voltage	Cord Set Specifications
120 Volts	UL Listed/CSA Certified Cord Set
	Minimum 18 AWG
	Type SVT or SJT three conductor cord
	Maximum length of 15 feet
	Parallel blade, grounding type attachment plug rated 15A, 125V
240 Volts (Europe only)	Cord Set with H05VV-F cord having three conductors with minimum diameter of 0.75 mm ²
	IEC-320 receptacle
	Male plug rated 10A, 250V

The unit automatically matches the connected input voltage. Therefore, no additional adjustments are necessary when connecting it to any input voltage within the range marked on the rear panel.

Wichtige Sicherheitshinweise (Germany)

1. Bitte lesen Sie diese Hinweise sorgfältig durch.
2. Heben Sie diese Anleitung für den späteren Gebrauch auf.
3. Vor jedem Reinigen ist das Gerät vom Stromnetz zu trennen. Verwenden Sie keine Flüssigoder Aerosolreiniger. Am besten eignet sich ein angefeuchtetes Tuch zur Reinigung.
4. Die Netzanschlusßsteckdose soll nahe dem Gerät angebracht und leicht zugänglich sein.
5. Das Gerät ist vor Feuchtigkeit zu schützen.
6. Bei der Aufstellung des Gerätes ist auf sicheren Stand zu achten. Ein Kippen oder Fallen könnte Beschädigungen hervorrufen.
7. Die Belüftungsöffnungen dienen der Luftzirkulation, die das Gerät vor Überhitzung schützt. Sorgen Sie dafür, daß diese Öffnungen nicht abgedeckt werden.
8. Beachten Sie beim Anschluß an das Stromnetz die Anschlußwerte.
9. Verlegen Sie die Netzanschlußleitung so, daß niemand darüber fallen kann. Es sollte auch nichts auf der Leitung abgestellt werden.
10. Alle Hinweise und Warnungen, die sich am Gerät befinden, sind zu beachten.
11. Wird das Gerät über einen längeren Zeitraum nicht benutzt, sollten Sie es vom Stromnetz trennen. Somit wird im Falle einer Überspannung eine Beschädigung vermieden.
12. Durch die Lüftungsöffnungen dürfen niemals Gegenstände oder Flüssigkeiten in das Gerät gelangen. Dies könnte einen Brand bzw. elektrischen Schlag auslösen.
13. Öffnen sie niemals das Gerät. Das Gerät darf aus Gründen der elektrischen Sicherheit nur von autorisiertem Servicepersonal geöffnet werden.
14. Wenn folgende Situationen auftreten ist das Gerät vom Stromnetz zu trennen und von einer qualifizierten Servicestelle zu überprüfen:
 - a. Netzkabel oder Netzstecker sind beschädigt.
 - b. Flüssigkeit ist in das Gerät eingedrungen.
 - c. Das Gerät war Feuchtigkeit ausgesetzt.
 - d. Wenn das Gerät nicht der Bedienungsanleitung entsprechend funktioniert oder Sie mit Hilfe dieser Anleitung keine Verbesserung erzielen.
 - e. Das Gerät ist gefallen und/oder das Gehäuse ist beschädigt.
 - f. Wenn das Gerät deutliche Anzeichen eines Defektes aufweist.
15. Zum Netzanschluß dieses Gerätes ist eine geprüfte Leitung zu verwenden. Für einen Nennstrom bis 6A und einem Gerätegewicht größer 3kg ist eine Leitung nicht leichter als H05VV-F, 3G, 0.75mm² einzusetzen.

Der arbeitsplatzbezogene Schalldruckpegel nach DIN 45 635 Teil 1000 beträgt 70dB(A) oder weniger.

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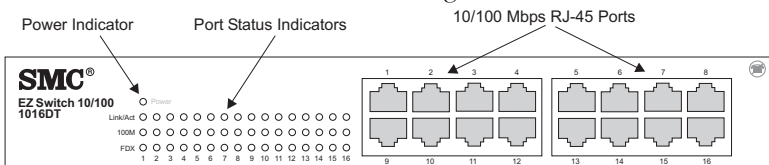
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ABOUT THE EZ SWITCH 10/100

The EZ Switch™ 10/100 SMC-EZ1016DT is a 16-port Fast Ethernet switch. The 10BASE-T/100BASE-TX ports deliver dedicated 10/100 Mbps links to each attached LAN segment – all with conventional cabling and adapters.

Auto-negotiation is used to select the optimal communication mode for each connection. Auto-sensing is used to select the optimal transmission speed for each connection. With store-and-forward switching and flow control, maximum data integrity is always maintained, even under heavy loading. Easy installation and reliability make this plug-and-play switch an ideal choice for smooth Fast Ethernet integration.



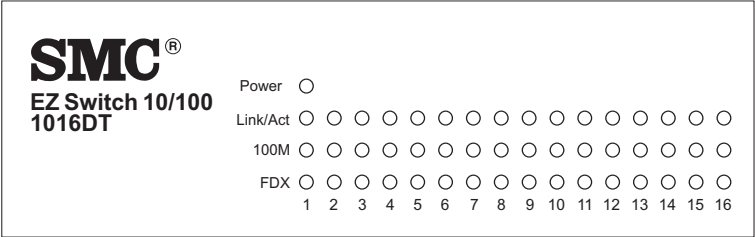
Features and Benefits

- ◆ Auto-negotiation of half or full duplex, and auto-sensing of transmission speed, on all ports
- ◆ Auto configuration for MDI/MDI-X cable connection allows connections to servers, workstations, hubs or switches to be made with straight-through cabling
- ◆ ANSI/IEEE 802.3u compliance ensures compatibility with standards-based hubs, switches and cards from any vendor
- ◆ Store-and-forward switching ensures error-free transmission
- ◆ Half- and full-duplex flow control prevents packets from being dropped under heavy loading

- ◆ Plug-and-play
- ◆ “At-a-glance” LEDs for port and system status monitoring
- ◆ Desktop and rack mountable

Front Panel LEDs

The front panel of the switch provides a link status LED for each RJ-45 port. In addition, the front panel also contains status LEDs for “at-a-glance” system monitoring. The following table details the functions of the various indicators:



Port and Switch Status LEDs		
LED	Condition	Status
Power	On Green	The switch is receiving power.
RJ-45 Ports		
Link/Act	On	The port has established a valid network connection.
	Flashing	Traffic is passing through the port.
	Off	The port has not established any network connection.
100M	On	Communications have been set to 100 Mbps.
	Off	Communications have been set to 10 Mbps.

Port and Switch Status LEDs		
LED	Condition	Status
FDX	On	The port is in full-duplex mode.
	Off	The port is in half-duplex mode.
	Flashing	Packet collision is occurring in half-duplex mode.

Rear Panel

The AC power socket is located on the rear panel of the switch.



INSTALLING THE SWITCH

The EZ Switch 10/100 can be placed on a desktop or shelf, or installed in a standard 19-inch equipment rack.

Equipment Checklist

After unpacking the EZ Switch 10/100, check the contents of the box to be sure you have received the following components:

- EZ Switch 10/100 SMC-EZ1016DT
- Appropriate AC power cable
- Rackmount kit
- SMC Warranty Registration Card
- This User Guide

Immediately inform your dealer in the event of any incorrect, missing or damaged parts. If possible, please retain the carton and original packing materials in case there is a need to return the product.

Please fill out and return the Warranty Registration Card to SMC or register on SMC's Web site at: **www.smc.com**. The EZ Switch 10/100 is covered by a limited lifetime warranty.

Selecting a Site

Be sure to follow the site selection guidelines below when choosing a location:

- ◆ Select a suitable location for the switch:
 - It should be accessible for installing, cabling and maintaining the switch.
 - The temperature and humidity should be within the ranges listed in the specifications.
 - The status LEDs should be clearly visible.
 - There should be adequate space (approximately two inches) on all sides for proper air flow.
- ◆ Before rack mounting the switch, pay particular attention to the following factors:
 - **Temperature:** Since the temperature within a rack assembly may be higher than the ambient room temperature, check that the rack-environment temperature is within the specified operating temperature range.
 - **Mechanical Loading:** Do not place any equipment on top of a rack-mounted switch.
 - **Circuit Overloading:** Be sure that the supply circuit to the rack assembly is not overloaded.
 - **Grounding:** Rack-mounted equipment should be properly grounded. Particular attention should be given to supply connections other than direct connections to the mains.
- ◆ Make sure twisted-pair cable is always routed away from power lines, fluorescent lighting fixtures and other sources of electrical interference such as radios and transmitters.

- ◆ Make sure that a properly grounded power outlet is within 2.44 meters (8 feet) of the switch and is powered from an independent circuit breaker. As with any equipment, using a filter or surge suppressor is recommended.

Instructions

1. **Positioning the Switch:** For desktop or shelf mounting, attach the four adhesive feet to the bottom of the switch. For rack-mounting, attach the mounting brackets on both sides of the switch with the screws provided, and install the switch in the rack.
2. **Applying Power:** Plug one end of the power cable into the power receptacle at the back of the switch, and the other end into an appropriate electrical outlet. Check the Power LED to be sure power is on.

Note: It is not necessary to power off the switch before connecting or disconnecting any UTP cables, as these actions *will not* disrupt the operation of other devices attached to the switch.

3. **Connecting PCs:** Connect each PC to an RJ-45 port on the switch with a straight-through twisted-pair cable segment, maximum 100 meters (328 feet). Use Category 3, 4, or 5 cable for 10 Mbps connections, and Category 5 cable for all 100 Mbps connections. The EZ Switch 10/100 will support up to 16 PCs. See the the “Cable Specifications” and “Connectivity Guidelines” sections of this guide for further information.

Note: If an attached device does not support auto-negotiation, the data rate will be sensed automatically and communication mode will default to half duplex.

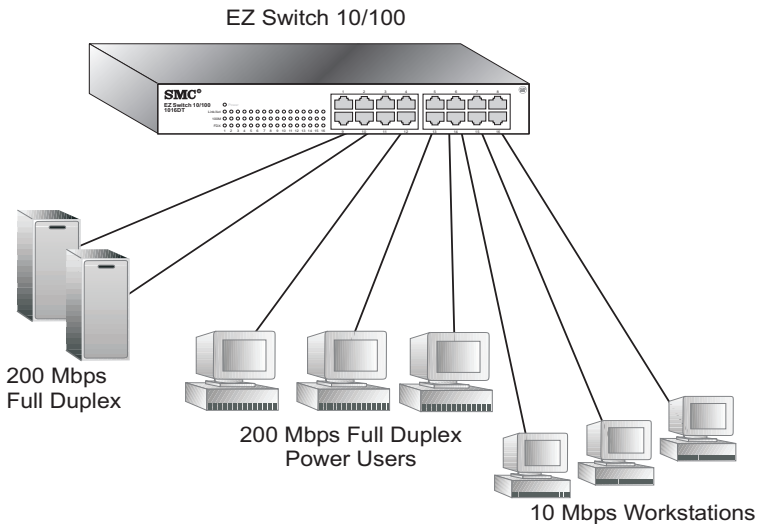
4. **Cascading Switches and Other Network Devices:** All the ports on the switch support automatic MDI/MDI-X configuration for cable connections. This allows you to use straight-through cable to connect to other switches or hubs from any port on the switch. No crossover cables or other device settings are needed. See the “Cable Specifications” and “Connectivity Guidelines” sections of this guide for further information.

SAMPLE APPLICATIONS

Some typical applications for the EZ Switch 10/100 are illustrated below:

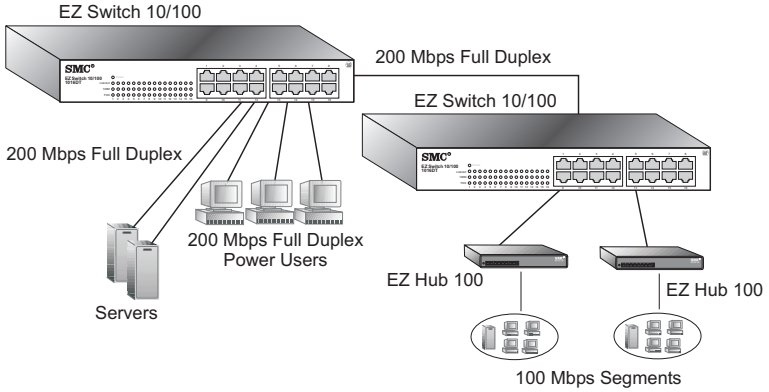
Standalone LAN

In the figure below, the EZ Switch 10/100 is operating as a collapsed backbone for a small LAN. It is providing dedicated 10 Mbps full-duplex connections to workstations and 200 Mbps full-duplex connections to power users and servers.



High-Speed Switch Links

In this application a 200 Mbps full-duplex link is made to a second EZ 10/100 switch.



TROUBLESHOOTING

1. Symptom

Power LED does not light after power on.

Probable Causes

Power outlet or power cord may be defective.

Possible Solutions

- Check for loose connections.
- Check the power outlet by using it for another device.
- Replace the power cord.

2. Symptom

Link LED does not light after connection is made.

Probable Causes

Switch port, network card or cable may be defective.

Possible Solutions

- Check that the switch and attached device are both powered on.
- Be sure the network cable is connected to both devices.
- Verify that Category 5 cable is used for 100 Mbps connections and that the length of any cable does not exceed 100 meters (328 feet). Check the network card and cable connections for defects.
- Replace the defective card or cable if necessary.

CABLES

Cable Specifications

Cable Types and Specifications			
Cable	Type	Max. Length	Connector
10BASE-T	Cat. 3, 4, 5 100-ohm UTP	100 m (328 ft)	RJ-45
100BASE-TX	Cat. 5 100-ohm UTP	100 m (328 ft)	RJ-45

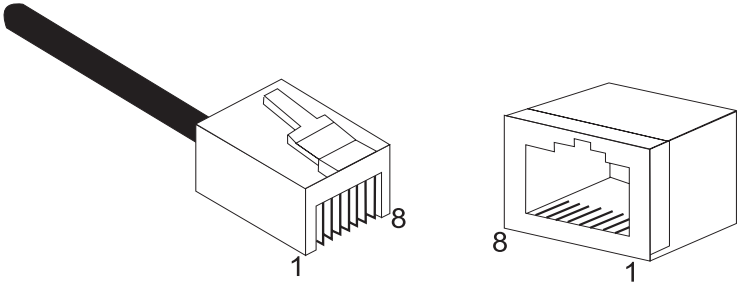
Twisted-Pair Cable and Pin Assignments

Caution: DO NOT plug a phone jack connector into any RJ-45 port. Use only twisted-pair cables with RJ-45 connectors that conform with FCC standards.

For 10BASE-T/100BASE-TX connections, a twisted-pair cable must have two pairs of wires. Each wire pair is identified by two different colors. For example, one wire might be red and the other, red with white stripes. Also, an RJ-45 connector must be attached to both ends of the cable.

Caution: Each wire pair must be attached to the RJ-45 connectors in a specific orientation.

The figure below illustrates how the pins on the RJ-45 connector are numbered. Be sure to hold the connectors in the same orientation when attaching the wires to the pins.



10BASE-T/100BASE-TX Pin Assignments

With standard straight-through 10BASE-T/100BASE-TX cable, pins 1 and 2 are used for transmitting data, and pins 3 and 6 for receiving data. The “+” and “-” signs in the table below are used to represent the polarity of the wires that make up each wire pair.

Because all ports on this switch support automatic MDI/MDI-X operation, you can use straight-through cables for all network connections to PCs or servers, or to other switches or hubs..

Straight-Through RJ-45 Pin Assignments	
End 1	End 2
1 (Tx+)	1 (Tx+)
2 (Tx-)	2 (Tx-)
3 (Rx+)	3 (Rx+)
6 (Rx-)	6 (Rx-)

Connectivity Guidelines

Maximum Fast Ethernet Network Diameter		
Repeater Type and Number	Twisted Pair 100BASE-TX	Twisted Pair/Fiber 100BASE-TX and FX
1 Class I	200 m (656 ft)	260.8 m (855.4 ft)
1 Class II	200 m (656 ft)	308.8 m (1012.6 ft)
2 Class II	205 m (672.4 ft)	216.2 m (709.1 ft)

Note: Network diameter is defined as the wire distance between two end stations in the same collision domain.

SPECIFICATIONS

EZ Switch 10/100

Model

SMC-EZ1016DT

Ports

16 RJ-45 ports

Network Interface

RJ-45: 100 ohm, UTP cable

10BASE-T – EIA/TIA Categories 3, 4, or 5

100BASE-TX – EIA/TIA Category 5

LEDs

Power – one

Link/Act (*Activity*) – one per port

10/100 (*10/100 Mbps*) – one per port

FDX (*full duplex*) – one per port

Switching Method

Store-and-forward

MAC Address Table

8K entries per system

SPECIFICATIONS

Filtering/Forwarding/Learning Rates

Full line rate

Size

27.3 x 16.5 x 4.5 cm (10.7 x 6.5 x 1.8 in)

Weight

1.425 kg (3 lbs 2 oz)

Temperature

Operating: 0° to 40° C (32° to 104° F)

Storage: -40° to 70° C (-40° to 158° F)

Humidity, non-condensing

10% to 90%

Power Requirements

Universal AC input; 110 to 230 VAC, 47 to 63 Hz

Power Consumption

13.2 Watts maximum

Heat Dissipation

45 BTU/hr maximum

Maximum Current

0.5A @ 110 VAC

0.22A @ 240 VAC

MTBF

60,000 hours @ 25°C

25,000 hours @ 50°C

Standards

IEEE 802.3

IEEE 802.3u

IEEE 802.3x

ISO/IEC 8802-3

FOR TECHNICAL SUPPORT, CALL:

From U.S.A. and Canada (24 hours a day, 7 days a week)

(800) SMC-4-YOU; (949) 679-8000; Fax: (949) 679-1481

From Europe (8:00 AM - 5:30 PM UK Time)

44 (0) 118 974 8700; Fax: 44 (0) 118 974 8701

INTERNET

E-mail addresses:

techsupport@smc.com

european.techsupport@smc-europe.com

Driver updates:

[http://www.smc.com/index.cfm?action=tech support drivers downloads](http://www.smc.com/index.cfm?action=tech%20support%20drivers%20downloads)

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Taiwan:	886-2-2659-9669;	Fax 886-2-2659-9666
Asia Pacific:	(65) 238 6556;	Fax (65) 238 6466
Korea:	82-2-553-0860;	Fax 82-2-553-7202
Japan:	81-45-224-2332;	Fax 81-45-224-2331
Australia:	61-2-9416-0437;	Fax 61-2-9416-0474
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